UNITED
NATIONS

TD

United Nations Conference
on Trade and Development

Distr.
GENERAL

TD/B/COM.3/16
16 September 1998

Original: ENGLISH

TRADE AND DEVELOPMENT BOARD
Commission on Enterprise, Business
Facilitation and Development
Third session
Geneva, 23 November 1998
Item 4 of the provisional agenda

Policy issues relating to ACCESS TO PARTICIPATION IN ELECTRONIC COMMERCE

Report by the UNCTAD secretariat

Executive summary

This document has two main objectives: (1) to assess the current state of connectivity/accessibility of various countries and groups of countries to Internet-based electronic commerce; and (2) to identify main areas in which policy issues need to be addressed in order to enhance access to participation in e-commerce.

The true revolution (and rapid growth) in electronic commerce has come from its Internet-based component. From the point of view of smaller players (including small and medium-sized enterprises and the majority of developing countries), this means that, in many respects, their ability to participate in worldwide electronic commerce will depend directly on their ability to connect to the Internet. Available data show exponential growth of Internet connectivity worldwide, with even higher growth rates in the developing world. However, inequalities in this respect remain strikingly high, since the capacity to produce, store and disseminate information on the Internet remains heavily concentrated in the more advanced countries. This phenomenon may not be reversed if current cost structures are not modified: if Internet access remains scarce and expensive in developing countries, their participation in electronic commerce will remain limited to traditional 'subcontracting' or 'pre-contractual' relationships.

In order to formulate and implement appropriate policies regarding access to participation in electronic commerce, Governments will need to consider the areas in which electronic commerce is most likely to bring benefits to their respective national economies; business-to-business, business-to-consumer and business-to-government transactions need to be considered in that respect.

GE.98-51708

Introduction

1. Internet based electronic commerce has started to challenge and revolutionize the analytical and practical bases of international trade:

(a) Because it has the potential to reduce transaction costs globally, it reduces traditional geographical disadvantages, especially those linked to distance,

(b) Because it allows direct contractual relations between buyers and sellers, it contributes to the emergence of new competitors in an increasing number of markets; smaller firms (and smaller economies) can now become successful competitors on international markets, and,

(c) Because it is based on information networks and information flows, it enhances transparency in markets by making buyers and sellers almost instantaneously aware of the price, quality and delivery conditions offered by various competitors.

2. Internet-based electronic commerce hence holds significant promise for trade and development, especially for those developing economies which, until now, have found it difficult to implement successfully diversification and trade efficiency strategies, for example. However, all the expected positive effects of such commerce will not materialize unless two sets of conditions are met:

(a) Like any new market, electronic commerce will require a delicate mix of freedom and rules; because it is global by nature, electronic commerce will require a well balanced set of global rules in order to be freed from inhibiting restrictions at the national levels;

(b) The present inequalities separating countries and enterprises in terms of accessibility, connectivity and prices will need to be addressed as a matter of priority.

3. The present document focuses on providing an up-to-date description of the current state of Internet-based electronic commerce, both from a global and from a regional and national point of view. Priority attention is given to connectivity issues, as well as to the potential uses which enterprises can make of the new tools of electronic commerce. The development of electronic channels to support business-to-business commerce, retail commerce and government procurement are analyzed in that content. The analysis includes a review of several current initiatives to enhance trade efficiency through the application of telecommunications and information technology in the various elements of the international trade process.

A. Overview of recent trends affecting Internet-based electronic commerce

4. The past several years have seen an explosion in the use of the Internet as a channel for global commerce, facilitating the sale of both virtual goods (e.g. online information, software and services) and physical merchandise. Although enterprises and individuals in many developing and transitional economies are already participating to some degree in electronic commerce, the major commercial impact to date has been felt in the United States, Europe and Japan. Traditional marketing and customer service paradigms for whole industries (e.g. travel, stockbroking, bookselling) are being re-engineered to

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take advantage of the interactive functionality, ease of information exchange and cost efficiencies offered through the use of Internet-based distribution channels.

1. Growth in Internet usage

5. One of the key factors driving this dramatic growth in electronic commerce among the industrialized economies has been the achievement of a critical mass of online users. International Data Corporation (IDC) has estimated the current Internet user population at 100 million, and it envisages that this worldwide figure will increase to 320 million by 2002. It also predicts that "most of the growth in Web usage will come outside of the United States as more people in developing countries embrace information technology."

2. Growth of Internet sites worldwide

6. The number of Internet hosts, or servers connected to the Internet, has also been rapidly increasing since the first survey was conducted by Network Wizards in 1995. The growth in total hosts is summarized in table 1 below.

Table 1: Number of Internet hosts worldwide

Survey Date	Jan-95	Jul-95	Jan-96	Jul-96	Jan-97	Jul-97	Jan-98	Jul-98
Hosts (000s)	5,846	8,200	14,352	16,729	21,819	26,053	29,670	36,739

Source: NUA, How Many Online?; Nielsen/CommerceNet Survey

7. Growth, however does not mean equality: the density of Internet hosts in selected countries is presented in table 2 below, expressed as the number of people per Internet server.

Table 2: Number of people per Internet server, for selected countries

Country/territory	People per server	Country/territory	People per server
Finland	25	Hong Kong, China	310
United States	50	Japan	470
Australia	60	South Africa	930
Canada	70	Rep. of Korea	1,550
Netherlands	90	Brazil	8,000
Singapore	125	Thailand	15,000
United Kingdom	130	Indonesia	87,000
Germany	180	China	561,000
Israel	185	India	1,200,000

Source: Killen & Associates; Network Wizards

3. Growth in revenues from electronic commerce

8. Electronic commerce has been growing steadily throughout the 1980s and 1990s, but until the mid-1990s most of this commercial activity was taking place on private-sector value-added networks (VANs), such as those operated by GEIS and IBM. Most of the business-to-business commerce involved large manufacturers in industries such as auto and retail merchandise placing orders with their suppliers. Many government agencies also disseminated procurement notices and accepted bids from vendors through these VANs.

9. During this period, a number of consumer and business-oriented online services, such as Compuserve, Prodigy and Dialog/DataStar, began expanding their proprietary networks internationally or distributed their services abroad through commercial VANs.

10. Beginning in 1994, a number of fee-based information services began operations on the World Wide Web, followed very quickly by companies selling consumer and industrial goods, as well as providing intermediary services such as obtaining quotes for insurance cover. By 1997, the total value of electronic commerce being conducted on the Internet was estimated by IDC at US$ 8 billion. Forrester Research and Simba Information both estimate the 1997 figure at US$ 9 billion. IDC recently projected that total electronic commerce revenues will rise to US$ 400 billion by 2002 although Simba predicts a more modest figure of US$ 102 billion.

11. Simba Information also predicts that total revenue from electronic commerce (including Internet, VANs and CD-ROM) will reach US$ 28.8 billion in 1998, with the business-to-business component of this revenue stream totalling US$ 19 billion. They forecast that this latter figure will grow to US$ 58 billion by 2002. Other researchers foresee much more robust growth -- Forrester Research predicts that business-to-business electronic commerce revenue alone should reach US$ 327 billion by 2002.

12. Although differing forecasting methodologies and definitions of electronic commerce are employed by the research houses quoted in this paper, the various projections all point to double-digit increases in electronic commerce activity in the coming years.

B. Regional perspectives

13. Although Internet use and electronic commerce are growing throughout the world, there are significant variations in absolute levels and growth rates, both among industrialized countries and between the developed and the developing world. The following discussion provides some perspectives on these regional developments, followed by an analysis of the impact on consumer, business-to-business and government purchasing activities.

1. Europe

14. Growth in European Internet usage and electronic commerce initially lagged behind that in the Unite States, but the proliferation of Internet service providers (ISPs) and online services (e.g. AOL) has helped fuel significant

recent growth.

15. Germany and the United Kingdom have the largest populations of Internet users (6.1 million and 7.2 million, respectively), although the overall Internet penetration (percent of population online) is only 7.3% and 12.8% respectively. Internet penetration is highest in Scandinavia, including Sweden (27% online), Norway (32.5%) and Finland (35%). France has 3.8 million Internet users (6.5% of population), though this does not include the millions of Minitel users, which represented a significant source of electronic commerce activity long before the emergence of the Web.

16. Forrester Research has estimated that electronic commerce in Europe will total approximately US$ 1.2 billion in 1998, rising to US$ 64.4 billion by 2001, with the majority of the volume growth (88%) coming in business-to-business commerce. A recent survey of 900 Western European businesses (of all sizes) by MORI found that almost half of their directors expressed confidence that "electronic commerce is the best option for the future of their business". Of the firms polled which are active on the Internet, nearly 25% indicated that they were already showing a profit from their online activities and 58% have realized significant cost savings through their use of the Internet (e-mail and World Wide Web) in conducting business.

17. Many SMEs in Europe appear to be taking a close look at opportunities in electronic commerce. A British Telecom-sponsored survey published in August 1998 showed that 54% of medium-sized companies and 33% of small companies have an Internet presence (E-mail and/or World Wide Web). Of the firms which had Internet access, 66% indicated that e-mail was now crucial to their business. In an earlier study by the same group, 91% of the firms surveyed indicated that the Internet would be an intrinsic part of their business' future.

2. Africa

18. African connectivity has improved significantly since the early 1990s but is still at very low levels compared to the developed economies.[1] There are now almost 150,000 Internet hosts in Africa, as well as over 250 ISPs. The majority of the current users are in South Africa (600,000), and only one out of every 8,000 people elsewhere in Africa is an Internet user. Countries in Africa leading the growth in Internet usage include Senegal (2,500 users), Tunisia (3,500), Ghana (4,500), Kenya (5,000), Morocco (6,000) and Zimbabwe (10,000).

19. In 1996, only 16 African countries were connected to the Internet. Today, over 75% of the 53 capital cities in Africa enjoy full Internet access. About 10 countries provide local-call Internet access in a second major city, while more than 10 others offer local-call access to the Internet throughout the country. However, connectivity in rural Africa continues to be problematic.

20. The cost of even dial-up Internet access remains high in many African countries. The table in Annex III summarizes the annualized cost of just five hours per month of Internet access time in selected African countries. The annual cost ranges from a low of US$ 136 in Botswana to as high as US$ 1,740 in Angola. This compares with an average cost for 20 hours of Internet access

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[1] See Annex I.

[2] See Annex II.

(phone and ISP fees) of US$ 29 per month (US$ 348 annualized) in the United States, US$ 74 (US$ 888 annualized) in Germany and US$ 65 (US$ 780) in the United Kingdom, according to a recent OECD paper.[4] Taking into account the differences in per capita income, Internet access costs in Africa are still very expensive for local residents. As many parts of rural Africa do not even have wireline telephone services, these areas can only access the Internet through cellular, wireless local loop or satellite telephone connections, which are typically even more expensive.

3. Middle East

21. Countries in the Middle East which permit public access to the Internet have seen substantial increases in the number of users online.[5] Israel leads the region in total Internet population and penetration, with 300,000 users (5.5% of the population), followed by the United Arab Emirates with 88,600 users (3.0%), Egypt with 61,000 users (0.1%) and Lebanon with 43,800 users (1.1%). Israel has 88,000 Internet hosts, which compares to just under 14,000 in the United Arab Emirates, 5,600 in Kuwait and slightly over 2,000 in Egypt.

22. A recent survey by the DIT Group estimated the total value of electronic commerce in the Middle East at between US$ 9 and 11.5 million in 1997. Only a small minority of the Internet services providers (ISPs) interviewed for the survey accepted payments through their World Wide Web sites or those which they manage for their clients. Only 20% of the ISPs surveyed offered secure transaction capabilities. As a result, the survey estimated that only 4% of users from the region had actually made purchases through the Internet in the past year, mostly from companies outside the Middle East. However, the Arab software companies participating in a separate component of the study indicated that they expected that up to a third of their transactions would take place through the Internet in the next 2-3 years[6].

4. Latin America and the Caribbean

23. Latin America has been experiencing explosive growth in Internet use over the past several years. Estimates of the number of Latin Americans online today range from 4.5 million (Nua) to over 8.5 million (Nazca Saatchi & Saatchi). Nazca Saatchi & Saatchi also projects that the Internet population in the region will grow to 34 million by 2000 and that the number of Latin American World Wide Web sites, mostly business-oriented, will reach 500,000 by 1999.[7]

24. Trade liberalization and economic growth have released a huge amount of pent-up demand for information technology at the business and consumer level. For example, in 1993 only about 44,000 PCS were sold in Brazil, whereas in 1997

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[4] Dismantling the Barriers to Global Electronic Commerce, OECD Briefing Paper (1997).

[5] See Annex IV Egypt is included in these figures, as well as in separate estimates for Africa presented in Annex II.

[6] In selected countries, such as Egypt, a number of information providers and commercial firms are already offering services through the Internet. Indeed, one Cairo supermarket has established a World Wide Web site where busy consumers can order their groceries online for home delivery.

[7] See Annex V.

this figure reached 2.5 million. Latin American consumers are apparently less wary of purchasing online than in some other regions. The Nazca Saatchi & Saatchi survey found that 29% of respondents had purchased goods or services online, which is less than the 48% figure they cite for the United States market but still indicative of strong electronic commerce potential at the consumer level.

25. Brazil is the leading Internet market in the region, with between 1 million and 1.3 million online users, depending on the survey cited. However, this figure is still low in relation to the overall population (less than 1%). Mexico (370,000 users), Chile (200,000 users), Colombia (120,000 users) and Argentina (170,000 users) also have significant Internet populations, although only Costa Rica's Internet user base (50,000) exceeds 5% of the overall population. The critical mass required to support electronic commerce effectively has therefore not yet been achieved.

26. A recent academic survey of electronic commerce activities in Latin America[4] indicates that Internet service providers (ISPs) are spearheading the push into electronic commerce within the region. The report lists approximately 30 Latin American and Spanish-speaking United States ISPs which are offering Web design, online catalogue and payment capabilities, training and systems integration services -- in addition to basic Internet access. Most of this activity appears to be directed at the business-to-business market at present.

5. Asia and the Pacific

27. The total number of users in the region is currently estimated to be 22 million, with the largest online populations found in Japan (12.1 million), Australia (3.3 million), The Republic of Korea (1.5 million) and China (1.175 million). Internet penetration is greatest in Australia (18% of the population online), followed by New Zealand (15.8%) and Singapore (14.7%). About 9.6% of Japan's citizens are online, although the country leads in the number of Internet hosts (1.4 million), followed distantly by Australia (750,000)[5].

28. IDC Research recently studied the top 1,000 companies in the region and found that 75% of them now had corporate World Wide Web sites. This percentage has more than doubled in the past year and now approaches their estimate for the United States market, according to which 81% of United States companies with over 100 employees have a corporate World Wide Web site.

29. IDC also predicts that electronic commerce revenues will reach the following levels by 2001 in the following Asian countries economies they analysed:

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[4] Charles Davis, Electronic Commerce in Spanish-Speaking Latin America: Actors, Issues and Challenges; Charles Davis; University of New Brunswick, Canada, 1998.

[5] See Annex VI.

Table 3. Electronic commerce - projected revenues in 2001

Country	EC Revenues (US$ Million)
Malaysia	1,000
Singapore	800
Thailand	200
Indonesia	<200
Philippines	<200

Source : IDC Research, 1997

6. United States and Canada

30. The recently released Nielsen/CommerceNet survey of Internet usage in the United states and Canada shows there were over 79 million Internet users (16 or older) as of June 1998. This represents an increase of 36% from the previous survey conducted in September 1997 and an average increase of 2.5% per month since the beginning of 1997. The number of individuals actually purchasing goods and services on the Internet also increased by 37% to around 20 million, with a further 28 million using the Internet to check prices and compare products.

31. A recent survey of small businesses in the United States found that 37% of them (i.e. some 2.6 million enterprises) now conduct business online. Another 1 million small businesses were likely to come online in 1998. The Small Business Internet Survey found that 80% of small businesses that go online seek information on business products and services, 65% use e-mail daily, 84% send e-mail to customers and 38% purchase business products and services online. A recent IBM survey of 1,000 small businesses found that 67% had Internet access and 24% operated a World Wide Web site. The United States has thus achieved the critical mass necessary to support a robust electronic commerce industry.

C. Business sector perspectives

32. Electronic commerce is already having a profound effect on organizations in many economic sectors and will impact each of the four major directions of commercial activity: including (1) business-to-business; (2) business-to-consumer; (3) business-to-government; and (4) consumer-to-government. The following discussion addresses the first three of these channels, the fourth being beyond the scope of this paper.

1. Business-to-business electronic commerce: from EDI to WWW

33. As previously noted, electronic commerce channels have been utilized for many years, mainly by large corporations and Governments, to facilitate commercial transactions. However, most small and medium-sized firms found the costs of implementing EDI-based applications using private VANs to be prohibitively high, except in those cases where the purchaser (e.g. government

or large manufacturer) dictated that this channel be utilized. In some cases, particularly United States Government procurement, many VANs realized significant revenues from translating EDI messages into a fax or paper format.

34. The advantage of these networks, however, is that they were specifically established to support the supply chains of major manufacturers and thus enjoyed a captive base of ongoing business from these large purchasers. Thus, there was a natural incentive for suppliers of relevant products, particularly component makers or contract manufacturers, to subscribe to VANs in order to receive procurement notices from their large industrial customers.

35. It was not only in the United States that these EDI-based supply chain networks had significant operations; a 1995 World Bank study estimated that Europe had around 30,000 EDI users, about 10-15% of which used EDI to facilitate international trade transactions. Asia, and particularly Japan, the Republic of Korea and Singapore, also has significant levels of EDI activity, although many companies use private data formats instead of the standardized UN-EDIFACT messages. The use of trade opportunity networks, such as the Electronic Trading Opportunities (ETO) system of the United Nations Trade Point Programme, also had its beginnings in value added networks.

36. The proliferation of Internet connectivity worldwide has resulted in a migration of these private network-based commerce applications to this new medium, and a rapid growth in the number of companies utilizing trade opportunity and supply chain networks to obtain new business. Most of these applications were re-engineered so that users only needed a standard Web browser to access information or transact business.

37. For example, today there are a number of trade opportunity networks operating on the World Wide Web that are affiliated with international organizations and associations, including:

- The UNTPDC's ETO System, which is arguably the largest in terms of message volume. Over 10,000 organizations worldwide receive ETOs via e-mail.
- World Trade Centers Association WTCA On-line (NETWORK service's successor)
- The TIPS Network, which was initially established by the UNDP.The Global Business Exchange, which is sponsored by a consortium which includes the International Bureau of Chambers of Commerce.

38. In addition, there are more than 100 World Wide Web or e-mail based trade lead services operated by private sector companies as well as trade promotion agencies worldwide. Many online trade information services, such as those operated by Trade Point USA and Trade Point Finland, offer other types of free or fee-based trade information, such as market research, company directories and commercial guides, in addition to trade opportunities.

39. With a few exceptions, these trade opportunity networks do not focus on a single sector or set of product categories; the more effective services employ sophisticated search technologies and structured data formats to allow users to identify relevant opportunities quickly. Although widely utilized, particularly in Latin America, trade opportunity systems generally focus on end use products or commodities and thus appeal more to trading houses and distribution firms rather than to industrial purchasers.

40. The EDI-based supply chain networks utilized by larger multinationals have also been expanded to include the Internet. One of the better known initiatives in this area is the Trading Process Network (TPN), operated by GE Information

Services, which has over 40,000 network customers worldwide. Introduced in 1996, TPN allows corporate purchasers to establish secure Internet channels to their main suppliers and to broadcast requests for quotations to potential new suppliers worldwide. The service was initially implemented in GE's Lighting Division and other GE operations, where purchasing lead times were reduced by 50% and costs of procured products by up to 30%. TPN is now being utilized by other multinationals such as Hewlett Packard, Textron Automotive and Chrysler. In addition, over 1,400 SMEs worldwide participate in the service, which reportedly generates over US$ 1 billion in transactions annually. For example, one small Hungarian company, Dellcomix, realizes over 20% of its annual revenues through TPN.

41. In addition to trade opportunity and supply chain networks, many industrial marketing techniques, such as catalogues and mass mailings, have been migrated to the Internet using both World Wide Web and e-mail technologies. Sophisticated new search technologies allow a manufacturer with many thousands of similar but distinct products, such as the electronic components producer AMP, to establish online catalogues through which potential customers can quickly locate the specific configuration they are seeking. A US-based company with strong Egyptian roots, Saqqara Systems, developed the AMP application and is a leader in the electronic catalogue market.

42. Several technology companies have developed sophisticated World Wide Web-based ordering systems which allow customers to specify online the exact configuration of the end product, which is then be made to order and shipped to them. Dell Computers sells over US$ 6 million of computers per day through its WWW site, while Cisco Systems now accepts online orders totalling over US$ 20 million per day.

43. Greater efficiency in the consummation of international trade transactions, one of the key objectives of UNCTAD's Trade Efficiency Initiative, is improving as a result of advances in electronic commerce, but there is still much work to be done in this area by Governments and the international trade community. Differences between nations in terms of commercial laws and regulations, particularly regarding the legal validity of electronic documents and digital signatures, have impeded efforts to dematerialize even a few of the many documents involved in an international trade transaction[9].

2. Business-to-consumer electronic commerce: global shopping

44. The growth of retail commerce on the Internet in many developed economies is an outgrowth of the boom in sales from mail-order catalogues which began in the 1970s and 1980s. Many of these catalogue retailers, as well as television shopping channels (e.g., QVC), gravitated naturally to the World Wide Web, as they typically sold products which could be delivered by mail or provided over the Internet (e.g. software). In addition, a number of new ventures, such as Virtual Vineyards, Auto-by-Tel and CD-NOW, took advantage of the ability to provide detailed information on specific categories of products -- or comparison shopping services -- to their customers. Many of these vendors, such as Amazon.com and 1-800-Flowers, have also developed the capability to service

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[9] Thirteen countries will be involved in the Bolero Launch Program, including Belgium, Brazil, France, Germany, Hong Kong (China), Italy, Japan, Norway, Singapore, Spain, Taiwan Province of China, United Kingdom and the United States. The market sectors involved will include bulk agricultural commodities, chemicals, automotive products, garments, toys, household goods, crude oil, computer products and processed foodstuffs.

foreign customers and offer information in foreign languages.

45. The scope of international retail opportunities depends largely upon the products being offered, product delivery considerations, and the investment required to "localize" the World Wide Web site for foreign customers.

3. Business-to-government electronic commerce: leading by example

46. Governments at the national, regional and even municipal level are utilizing electronic commerce channels to increase the efficiency of their operations and improve the level of service offered to their constituents. A major area of interest for businesses is the increased use by governments of the Internet and VANs to disseminate procurement opportunities and receive quotations from vendors interested in providing goods and services.

47. Traditionally, procurement opportunities were either sent to a short list of pre-qualified vendors or were advertised in newspapers or government publications. In the 1980s and early 1990s some more innovative government agencies began to utilize dial-up bulletin board services (BBS) to provide online access to current procurement requests. However this approach required the vendor to purchase and implement compatible communications software in order to view this information. Other agencies, most notably the US Department of Defense, needed to reach a national or international audience with thousands of procurement requests. As a result, these organizations began to utilize commercial VANs to distribute procurement information to potential vendors. This solution also required suppliers to subscribe to a network services provider and use specialized communications capabilities, as well as EDI translation software, if they wished to download the procurement information to their internal order entry and business systems.

48. With the advent of the World Wide Web, thousands of government agencies have established Web sites to facilitate communications with their suppliers. Examples of Governments which are currently using the Internet in their procurement activities include:

- Australia: Transigo (www.transigo.net.au/wci/home)
- Canada: MERX (www.merx.cebra.com/)
- European Union: Tenders Electronic Daily (www2.echo.lu/echo/databases/ted/en/ted)
- Hong Kong, China: Government Supplies Department (www.info.gov.hk/gsd/tender.htm)
- Poland: Office of Public Procurement (www.uzp.gov.pl/a_index.html)
- United States: General Services Administration (www.fss.gsa.gov/index.html)

49. As a result of the World Trade Organization Agreement to increase cross-border competition in major government procurement, many government agencies are utilizing the Internet to advertise significant procurements worldwide. In addition, many multilateral development agencies are making increased use of the Internet in their purchasing activities. For example, the United Nations will shortly be launching Development Business Online, which will feature procurement opportunities from the major multilateral development banks and other international development agencies.

50. The involvement of government agencies in purchasing through electronic channels can have a catalytic benefit on the local electronic commerce environment in a given country. Governments, even in heavily market-oriented

economies, are usually among the largest buyers of goods and services from the private sector. The participation of Governments as online purchasers can therefore help to draw their suppliers into electronic commerce. This is particularly true in the case of smaller vendors, which may otherwise find it difficult to justify the necessary technological investment without a broader base of customers who wish to purchase through electronic channels.

51. Building the critical mass of online buyers to support the development of a healthy electronic commerce community requires the active involvement of government, not only as a regulator but also as a commercial participant -- and ideally as a source of training and technical assistance resources to nascent electronic commerce firms. This was the case in the United States, where thousands of companies were using dial-up and network-based data communications technologies to sell to government long before the Internet emerged as the electronic commerce channel of choice, and it is also what happened in a number of other countries.

Conclusions

52. From the point of view of developing countries, access to participation in electronic commerce raises several types of policy issues[11], including the following:

(a) Offering the proper regulatory, fiscal and economic framework to modify the current cost structure of Internet usage: stimulating awareness among potential users (especially small and medium-sized enterprises), enhancing competition among Internet service providers (ISPs), attracting competence from the more experienced players, and fostering capacity building (including training) of local players should be considered as appropriate policy objectives in this context;

(b) Granting priority to the provision of those electronic-based products and services which are most likely to enhance local trade efficiency (e.g in the area of procurement, customs operations, or payments) or competitiveness (e.g. through the identification of niches, or global dissemination of electronic catalogues or ETOs); this would also allow national economies to better link participation in electronic commerce with national trade policy objectives.

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[11] The directions indicated above will need to be considered in the broader context of on-going international discussions on electronic commerce, in particular in the WTO context; recent proposals made for a 'Global Framework for Electronic Commerce' also need to be considered from the point of view of their possible implications on trade and development. This is the purpose of document TD/B/COM.3/17.

Annex I
Internet usage in selected European countries

Country	Date of estimate	Number of Internet users	% of total pop.	Source	Internet hosts*
Austria	8/98	442,000	5.5%	IDC Research	132,202
Belgium	8/98	558,000	5.5%	IDC Research	153,760
Czech Rep.	9/97	200,000	1.9%	Virtual Info Park	65,672
Denmark	5/98	800,000	16.0%	Politiken	190,293
Estonia	7/97	8,300	1.8%	Baltic Media Facts	18,948
Finland	5/98	1,790,000	35.0%	Gallup Media	513,527
France	12/97	3,800,000	6.5%	NOP Research	431,045
Germany	3/98	6,100,000	7.3%	NOP Research	1,154,340
Greece	1/98	111,000	1.0%	IDC Research	40,061
Hungary	5/98	200,000	2.0%	ISYS Hungary Kft(Est.)	73,987
Iceland	2/98	121,600	45.0%	Gallup	20,678
Ireland	1/98	145,000	4.2%	IDC Research	44,840
Italy	1/98	1,380,000	2.2%	IDC Research	320,725
Netherlands	4/98	1,390,000	8.3%	Nipo	514,660
Norway	11/97	1,400,000	32.5%	MMI Internet Barometer 97	312,441
Poland	11/97	700,000	1.8%	Nua Estimates	98,798
Portugal	1/98	188,000	1.9%	IDC Research	45,113
Russian Federation	7/98	1,000,000	0.7%	Russian N.P. Center for Internet Tech.	130,422
Slovakia	11/97	190,000	5.0%	Net Projekt	14,154
Spain	6/98	1,850,000	4.7%	AIMC	243,436
Sweden	5/98	2,400,000	27.0%	Relevant Knowledge	380,634
Switzerland	6/98	870,000	9.4%	Swisscom	205,593
United Kingdom	12/97	7,200,000	12.8%	NOP Research	1,190,663

Compiled by Nua - How Many Online?; Network Wizards.

* Includes only hosts using country top level domain (TLD) names; hosts using ".com", ".net", etc. not included. The same remark apply to annexes II, IV, V and VI.

Annex II
Analysis of African Internet Connectivity

Country	N° of ISPs	N° Internet hosts*	N° of Internet users	Pop. (mns)	Internet users pop.
Algeria	1	1	1,500	29.81	97,000
Angola	2	2	1,000	11.26	1,167
Benin	2	2	2,000	5.66	2,750
Botswana	2	574	5,000	1.41	2,800
Burkina Faso	1	21	1,000	10.42	10,857
Burundi	2	2	500	6.10	84,200
Cameroon	4	5	2,000	13.83	6,750
Central Afric. Rep.	1	1	200	3.62	18,200
Chad	1	1	500	5.60	123,000
Congo, Dem. Rep.	1	8	1,000	44.24	440,000
Côte d'Ivoire	3	285	12,000	14.90	14,800
Djibouti	1	1	400	0.43	1,075
Egypt	28	1,241	30,000	66.05	1,035
Equatorial Guinea	1	2	200	0.42	2,500
Eritrea	1	1	300	3.66	12,333
Ethiopia	4	28	3,000	57.80	20,667
Gabon	2	2	1,000	1.22	1,200
Gambia	1	1	500	1.44	6,600
Ghana	3	241	4,500	17.70	1,256
Guinea	1	1	300	6.80	22,700
Guinea-Bissau	2	22	500	1.19	5,500
Ivory Coast	1	265	1,000	14.75	14,800
Kenya	10	837	5,000	29.54	5,830
Lesotho	1	17	500	2.04	20,300
Madagascar	5	19	1,000	13.48	13,433
Malawi	1	1	400	9.72	24,250
Mali	2	1	400	9.41	23,500
Mauritania	2	22	1,000	2.30	23,000
Mauritius	6	310	260	1.12	1,146
Morocco	3	173	5,000	28.36	4,867
Mozambique	2	83	1,500	16.42	8,357
Namibia	6	862	2,000	1.70	950
Niger	2	2	200	8.70	44,500
Nigeria	6	91	1,000	120.20	101,200
Rwanda	1	0	100	8.60	86,000
Senegal	3	189	2,500	9.00	3,600
Seychelles	1	7	1,000	0.8	80
Sierra Leone	1	0	50	4.80	96,000
South Africa	58	14,877	600,000	39.00	65
Sudan	1	0	400	30.00	150,000
Swaziland	3	247	900	1.17	1,278
Tanzania	14	137	2,000	25.12	12,560
Togo	2	82	300	4.4	14,667
Tunisia	4	87	3,000	9.0	2,933
Uganda	4	41	2,000	20.40	10,200
Zambia	3	236	2,000	9.50	4,750
Zimbabwe	17	836	12,000	11.10	1,110
Total or average	256	48,272	884,185	719.49	1,050

Source: Mike Jensen, Network Wizards

Annex III

Annual cost for internet access in selected african countries

Country	Cost/year $	Country	Cost/year $
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

Source: Mike Jensen

Note: Costs based on five hours per month dial-up access, including cost of local call to ISP.

Annex IV

Internet Usage in selected middle eastern countries

Country	Date of estimate	Internet users	% of pop.	Source	Hosts*
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	379
Egypt	[illegible]	[illegible]	[illegible]	[illegible]	2,043
Israel	[illegible]	[illegible]	[illegible]	Internet Israel	87,842
Jordan	[illegible]	[illegible]	[illegible]	[illegible]	360
Kuwait	[illegible]	[illegible]	[illegible]	[illegible]	3,347
Lebanon	[illegible]	[illegible]	[illegible]	[illegible]	1,400
Oman	[illegible]	[illegible]	[illegible]	[illegible]	666
Qatar	[illegible]	[illegible]	[illegible]	[illegible]	23
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	14,513

Compiled by Nua - How Many Online?; Network Wizards

Annex V

Internet usage in Latin America and the Caribbean

Country	Date of estimate	Internet users	% of pop.	Source	N° of hosts*
Argentina	6/97	370,000	.1*	CommerceNet	87,934
Bolivia	6/97	4,000	.1*	ITU/Siemens	306
Brazil	6/97	1,100,000	.7*	ITU Brazil	163,490
Chile	6/97	200,000	1.4*	CommerceNet	22,888
Colombia	6/97	120,000	.3*	CommerceNet	11,864
Costa Rica	6/97	50,000	1.4*	CommerceNet	2,941
Ecuador	12/97	5,000	.04*	ITU/Siemens	1,227
Mexico	6/97	370,000	.4*	CommerceNet	83,944
Paraguay	12/97	1,500	.03*	ITU/Siemens	455
Peru	12/97	31,000	.1*	CommerceNet	3,783
Uruguay	12/97	9,000	.3*	ITU/Siemens	16,141
Venezuela	6/97	35,000	.2*	CommerceNet	8,424

Compiled by Nua - How Many Online?; Network Wizards

Annex VI

Internet usage in the Asia/Pacific Region

Country or territory	Date	Internet users	% of pop.	Source	Internet hosts*
Australia	6/98	3,280,000	18.0*	Morgan Research	750,327
Bangladesh	6/97	7,000	.005*	Nando Techserver	N/A
China	6/98	1,175,000	.10*	Nando Times	205,593
Hong Kong, China	6/98	980,000	13.9*	A.C. Nielsen	72,232
India	12/97	80,000	.01*	Reuters	10,476
Indonesia	6/98	70,000	.3*	Indonesian IT	10,692
Japan	12/98	12,100,000	9.6*	Nikkei, P	1,452,200
Korea, Rep. of	6/98	1,300,000	2.9*	AsiaBiz Tech	174,800
Malaysia	12/98	800,000	3.7*	Jaring Network	40,758
New Zealand	12/98	560,000	15.9*	A.C. Nielsen McNair	177,783
Philippines	6/97	150,000	.01*	Paul Budde Com.	7,602
Singapore	6/97	500,000	14.7*	A.C. Nielsen	59,463
Taiwan Prov. of China	12/98	480,000	2.3*	IDC Research	103,661
Thailand	12/98	131,000	0.23*	IDC Research	25,459
Viet Nam	6/98	6,000	0.008*	Nikkei, BP/AsiaBiz	25

Compiled by Nua - How Many Online?; Network Wizards